Return to Work after mTBI: Therapy’s role in return to work after acute or delayed recovery

Emily Summerfield, OTR/L, CBIS
Jillian Jones, DPT, CBIS
Objectives

1. Define and describe the etiology of complex concussion
2. Name two symptoms of Delayed Recovery from Concussion
3. Name three interventions used for the management of Concussion/Delayed Recovery
4. Understand how return to school protocols can guide return to work recommendations
5. Discuss how psychosocial factors can influence recovery and prognosis
Definition

- A concussion is an injury that affects the way the brain works or functions.
- It is also referred to by some as mild Traumatic Brain Injury (mTBI).
- Concussions can occur from a bump, blow, or jolt to the head or neck that causes the brain to move inside of the skull.
- Concussions can also occur from a fall or a blow to the body that causes the head and brain to move quickly back and forth.
- Concussions are not always associated with a loss of consciousness or extreme injuries.

Common Symptoms

• Mental
  • Confusion
  • Difficulty concentration
  • Problems remembering
  • Feeling foggy or slowed down

• Physical
  • Headache
  • Nausea or vomiting
  • Blurry or double vision
  • Dizziness or difficulty with balance
  • Sensitivity to light, noise, or lots of sensory stimulation

("Concussion Signs and Symptoms | HEADS UP | CDC Injury Center", 2019)
Common Symptoms Continued

• Emotional
  • A strong emotional reaction to having been injured
  • Feeling sad or down
  • Decreased interest in hobbies
  • Irritability or moodiness
  • Nervousness
  • A desire to be isolated from other people or a concern about participating in community activities

• Sleep
  • Difficulty falling or staying asleep
  • Sleeping more or less than usual
  • Drowsiness
Etiology

https://www.youtube.com/watch?v=55u5Ivx31og
How is Concussion Diagnosed?

• Significant portion of current research is focused on diagnoses via imaging and biomarkers

• **No tests readily available** for general public at this time – concussion does not show up on CT as there is not bruising or hemorrhaging – this is associated with moderate to severe TBI

• **Concussion is an injury of the axons** – not visible on standard CT scan

• In sport concussion field tests are available (ie. SCAT5, King Devick)

• These screen for possibility of concussion and if positive indicate need for medical attention

• **Diagnosis difficult** without conclusive testing and results

• **Inconsistent approaches throughout medical community** on treatment interventions without standard testing and results

Acute Concussion Recovery

• Most concussion symptoms will resolve within **4 weeks of the concussion event** due to spontaneous healing

• In the past, rest was recommended (3 weeks complete “brain rest”)

• Research now recommends return to everyday activity and routine as early as 24-48 hours.

• **Gradual** return to previous activity level and intensity

• Modifications to class/work schedule as tolerated during gradual return

("Recovery from Concussion | HEADS UP | CDC Injury Center", 2019)
Acute Concussion Recovery

• Return to School: emphasis on Return to Learn (504 plan)
  • Return to Play: only after tolerating a full school and maintaining grades

VS

• Return to work
  • Often driven by policies of individual workplace
  • Socioeconomic status considerations
  • Modifications to work environment and schedule as able
REAP Protocol

- Remove/reduce, Educate, Adjust/accommodate, and Pace
- **Acute-based protocol** using an interdisciplinary approach incorporating the following teams:
  - school/physical team
  - School/academic
  - family team
  - medical team.
- Approximately **3-week program** with emphasis of gradual return to learn and return to play
- 6-step Graduated Return to Play

(McAvoy, "Center for Concussion REAP ", 2019, pp. 1-15)
PCS vs PPCS vs Delayed Recovery

Debate over current terminology

- PCS (Post Concussive Syndrome): Prevalent term used, however moving away from as this cannot be classified as a syndrome due to inconsistent symptom presentation
- PPCS (Persistent Post Concussive Symptoms)
- Delayed Recovery – used through the remainder of this presentation
Delayed Recovery

• Delayed recovery from concussion occurs in **15-20%** of individuals
• Delayed Recovery is diagnosed if symptoms persist **past the 4-week mark**
• Symptoms are the same as with acute concussion but may **change in frequency and severity**
• No diagnostic tests
• Symptoms may last **for months to years** beyond concussion event
Who is at risk for delayed recovery?

- More research now on identifying predictors of delayed recovery
- Evidence based predictors include:
  - PMH anxiety, depression
  - PMH migraine
  - Concurrent significant life stressors
  - Substance abuse
  - Some also suggest female gender, hormonal imbalance (ie. puberty, menopause, thyroid issues)

("Recovery from Concussion | HEADS UP | CDC Injury Center", 2019)
Invisible Injury

- Symptoms must be reported and generally are not outwardly visible
- Feel injured but don't look injured
- Often leads to increasing symptoms of anxiety and depression, even without previous diagnosis
  - Symptoms include fatigue, dizziness, headache – mimic those of the concussion itself
- Need for providing a positive outlook
  - Balance between accommodating symptoms but not bringing too much focus on symptoms
  - Validating symptoms and then re-directing to goals of return to learn/play
Concussion vs. Anxiety vs. Depression

PCS
- Headaches
- Fatigue
- Irritability
- Anxiety
- Insomnia
- Loss of concentration/memory
- Dizziness
- Ringing in the ears
- Neck tension
- Nausea
- Blurred vision
- Noise light sensitivity

Anxiety
- Headaches
- Fatigue
- Irritability
- Insomnia
- Lack of Concentration
- Dizziness
- Neck tension
- Nausea
- Pulsing in ear
- Numbness/Tingling
- Shortness of breath
- Chest pain
- Heart palpitation
- Weakness in legs

Depression
- Headaches
- Decreased energy or fatigue
- Anxiousness
- Irritability
- Insomnia
- Difficulty concentrating/remembering or making decisions
- Persistent sadness
- Feeling of hopelessness or pessimism
- Loss of interest
- Moving or talking slowly
- Feeling restless
- Appetite or weight changes
- Thoughts of death or suicide
Increase in PCS symptoms

Decreased performance at school/work

Increased psychosocial stressors
Pacing Up and Pacing Down

Long-Term Goal
Comprehensive Evaluation of Concussion

Includes evaluation in the following areas:

- Autonomic function
- Oculomotor
- Cervical
- Cognition
- Vestibular
- Migraine
- Psychosocial
  
  Neuropsych Testing
Therapies Provided at On With Life:

- Physical Therapy
- Occupational Therapy
- Speech Therapy
- Counseling
- Neuro-Psychology
- Medical
Comprehensive Concussion Clinic

• All team members in one place
• Treat holistically
• Special training and protocol for concussion
  • Physical Therapist with vestibular certification
  • Occupational therapists with extensive vision training
• External partners with neuro-optometrist(s)
• Neuropsychologist and counseling available on site
What does the research say?
Return to Work & Accommodations
How are Return to School and Return to Work Similar?

- Adolescent sports concussion and return to play/school recommendations have been researched far more due to media attention and prevalence.
- Less research and resources given to develop return to work protocols and procedures for general population.
- What do we know about best practice for return to school and how if it all does it apply to return to work?
Common Work Accommodations

• Desk modifications, standing desk, changing height/angle of computer or paperwork
• Screen adjustments, color layovers
• Line guides for reading
• Tinted lenses or blue blockers
• Ear plugs or buds with brown/white/pink noise
• Lamp lighting to replace fluorescent lighting or natural lighting coming in and on to computer screen
Common Work Accommodations Cont.

• Return to work in increments as able. Part time work progressing to full-time over course of recovery (Work readiness assessment)
• Alternating work tasks every 30 minutes as able (i.e. 30 minutes of typing alternated with 30 minutes phone calls/filing)
• Breaks as needed for short walking/de-escalation
• 20/20/20 rule
20/20/20 Rule
Ergonomic Desk Set-up Standing Variation
Team Conceptualization

- Comprehensive approach
  - Understanding the big picture and how treating the whole person is necessary
    - Physical, cognitive, emotional, social
  - Discussion of On With Life domains of concussion care, dignity related challenges, pacing up/pacing down, relevant medical information

- Discussed weekly in Concussion Rounds

- Utilized as a clinical tool to aid clinicians to provide comprehensive treatment to the person served.
"Person Served Education" Class

- Newly added to On With Life's Complex Concussion Program
- Co-created by Dr. Allison Logemann at UNMC in Omaha, NE
- Dr. Logemann was able to adopt the concepts from the original manuscript to best fit On With Life's complex concussion program
- 4-6-week standard class for person served in our delayed recovery algorithm
- Topics include:
  - Stress management
  - Activity scheduling
  - Sleep hygiene
  - Cognitive thought restructuring
Acute Referral: Case Study
Acute Referral

• 29 y/o, female, presents with acute concussion following MVA ~1.5 weeks before initial concussion clinic evaluation.
• Imaging "unremarkable"
• Attempted return to work (office environment) 3 days later but left due to significant symptom onset
• Primary Complaints: frontal/retroocular headache, neck pain, upper back stiffness, nausea, dizziness/balance problems, sensitivity to light/noise, mental fog/dazed, delayed response to questions, difficulty concentrating, difficulty remembering, fatigue/low energy, irritability, and mood/personality changes
Occupational Therapy

**Evaluation**

- Convergence Insufficiency Survey (CISS): 51
- Initial discussion of workplace environment/set-up
- Developmental Eye Movement (DEM):
  - Vertical: 48
  - Horizontal: 60
  - H/V ratio: 1.25
- Oculomotor Screen:
  - Photophobia +
  - Pursuits and Saccades: Impaired
  - Convergence: WFL

**Discharge**

- Convergence Insufficiency Survey (CISS): 12
- Utilizing minimal accommodations with educated to continue to progress away (lighting, book stand, blue blockers)
- Developmental Eye Movement (DEM):
  - Vertical: 35
  - Horizontal: 39
  - H/V ratio: 1.11
- Oculomotor Screen:
  - Photophobia +
  - Pursuits and Saccades: Intact
  - Convergence: WFL

Total OT visits: 5
Physical Therapy

Evaluation

• Buffalo Concussion Treadmill Test (BCTT): Indicates dysautonomia, discontinued after 5 minutes
  • HR max set at 90 bpm
• Cervical ROM restrictions, symptom onset with active ROM
  • Applied kinesiotape at eval
  • Provided cervical HEP
• Deep Neck Flexor Endurance Test: 5.12 seconds

Discharge

• Buffalo Concussion Treadmill Test (BCTT): WNL
• Cervical ROM
  • Symmetrical
  • Referred to TMJ specialist
• Deep Neck Flexor Endurance Test: 25 seconds
• No symptom reports of dizziness or headaches

Total PT visits (at OWL): 6
Speech Therapy

Evaluation Only

• "clinical judgment indicates that pain and difficulty sleeping are confounding true cognitive level, and need to be addressed prior to any further cognitive-communication evaluation or treatment"

• Provided educational components of sleep hygiene, language- and physical-based behavior interventions for anxiety,

• Role going forward as consult only unless cognitive/RTM issues persisted beyond OT/PT treatment, which they did not.

Total SLP visits: 1
Therapy Overview

Main concern was impending RTW

Use of REAP Protocol to guide

- Remove: ~1 week off from work immediately following concussion (attempted to return but could not tolerate)
- Educate: Provided education on sleep hygiene, expected progress, graded return to activity and anxiety's role in concussion recovery
- Adjust/Accommodate: Educational handouts and demonstration of temporary accommodations available for return to work
  - Book stand, lighting adjustments, blue blockers, 20/20/20 rule
  - Pace: Goal to pace up to full time work - Met

Total Visits (all disciplines): 12
Delayed Referral: Case Study
Delayed Referral

- 30+ year old, male, presents with post concussive syndrome secondary to MVA.
- CT scan: no abnormalities
- Chief complaints: nausea, dizziness, challenge with memory, photosensitivity, noise sensitivity/difficulty with multi-tasking with music, sleep disturbances due to pain/tenderness at scapula
- History: anxiety (currently medicated, seeing a counselor), recovered alcoholic, addictive personality
- Work: high stress office position; currently on medical leave
Occupational Therapy Evaluation

• Evaluation
  • Convergence Insufficiency Survey (CISS): 49
  • Developmental Eye Movement (DEM):
    • Vertical: 54
    • Horizontal: 80
    • H/V ratio: 1.48
  • Oculomotor Screen:
    • Photophobia +
    • Pursuits: latent, choppy specifically at end range in majority of quadrants
    • Saccades: horizontal tolerates 10 reps choppy at times; vertical limited tolerance lack of coordination and overall choppy. Increase in nausea reported.
    • Convergence: complaints of blurriness at 8 inches, able to be progressed to approximately 5 inches, limited adduction of right eye.
Occupational Therapy Discharge

- Discharge
  - Number of visits: 34
  - CISS: 24
  - DEM
  - Vertical: 43
    - Horizontal: 43
    - H/V ratio: 1.00
  - Oculomotor: referral to Dr. Erik Romsdahl, adequate progression in oculomotor exercise program throughout episodic care, improvement in overall symptoms reported, tapering use of tinted lenses.
  - Tolerating working at home up to 12-18-hour days including computer work, reading documents, and reading journal articles.
Physical Therapy Evaluation

- **Evaluation**
  - Balance Romberg stance with eyes closed (two trials): 13 secs both trials
  - Vestibular: dizziness reported with quick head movement and transitional movements. Person served reported dizziness would last up to 1 minute.
    - VOR: abnormal; bilateral hypofunction
  - Cervical: tenderness throughout right upper quadrant. Severe nausea with palpation.
  - Dysautonomia: unable to complete BCTT due to sensitivities and vestibular intolerance
    - Light aerobic activity: walking short bouts around lake near his home
Physical Therapy Discharge

• Discharge
  • Number of visits: 28
  • Balance: Romberg stance with eyes closed (two trials): 22 seconds
  • Cervical: significant improvement with symmetrical cervical range of motion
  • Vestibular: horizontal VOR edge of mat tolerated for 20 seconds without increase in symptoms greater than 3 points.
    • *Significant improvement from evaluation
  • Dysautonomia: WNL with addition of dual cog task
Speech Therapy Evaluation

- Delayed SLP referral secondary to triage physical and emotional symptoms
- Significant noise sensitivity to noise during work related tasks.
- Cognition: challenges with attention, high level executive functioning skills impacting work performance.
- Functional Assessment of Verbal Reasoning and Executive Strategies - FAVRES

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Speech Therapy Discharge

- Number of visits: 16
- Team facilitated neuropsychology evaluation
- Participated in OWL new "PE class"
- Focus on Work readiness such as attention, high level executive functioning skills, pacing up activities, and hierarchy of sound paired with executive functioning tasks.
- Person served returned to work, incorporated pacing activities into daily routine (both at home and work), and utilized cognitive strategies to improve executive functioning skills
- Continued meeting with mental health counselor on weekly basis
Questions ?


K. (n.d.). Center for Concussion REAP.


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